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APPLICANT : DAINIPPON PRINTING CO LTD;

INVENTOR : KAFUKU MASAOKI;

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TITLE : LIQUID CRYSTALLINE ELECTRON CHARGE TRANSPORTING MATERIAL

ABSTRACT : PROBLEM TO BE SOLVED: To provide an electron charge transporting material concurrently having the advantage of an amorphous material with structural flexibility and homogeneity over a large area and the advantage of a crystalline material with a molecular orientation property and excellent in a high-quality charge transportation property and a thin layer forming property by applying a smectic liquid crystalline property to the liquid crystalline charge transporting material, and setting the electron mobility to a specific value or above.

SOLUTION: This liquid crystalline charge transporting material has a smectic liquid crystalline property and electron mobility or a positive hole moving speed of $1 \times 10^{-5} \text{ cm}^2/\text{V.s}$ or above. Since the liquid crystalline molecule has self-orientation property due to its molecular structure, the charge transportation at its hopping site differs from that of a molecular dispersion material, the spatial and energetic dispersion of the hopping site is suppressed, and the band-like transportation characteristic obtained in the molecular crystal is realized. Large mobility can be realized, and its electric field dependency is not observed.

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